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Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Sp_Wa/2017-18 20.03.2018

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Santhosh Nagara and Prashanth Nagara surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/221/2017-18 Dated: 07.02.2018
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	20.03.2018

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2012	2013	2014	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1259	
4	Weight of saturated surface dry aggregate in air	W_3 g	2006	2007	2008	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	767	769	749	
6	Weight of oven dried aggregate	W_4 g	1999	1997	1998	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.606	2.597	2.668	2.624
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.630	2.631	2.704	2.655
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.35%	0.50%	0.50%	0.45%

Information is furnished by the Customer/Representative.

Comments:

⇒ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note:

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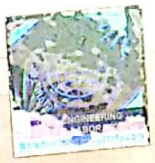
Job No: CTCE/BBMP/KRIDL/W.No.13/BC/Bitumen/2017-18

20.03.2018

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Santhosh Nagara and Prashanth Nagara surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/221/2017-18 Dated: 07.02.2018
* Sample ID	:	Roads at Santhosh Nagara and Prashanth Nagara Ward No.13
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	20.03.2018



BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469.5	469.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	30.5	30.50
7. Bitumen content in %	6.10	6.10
8. Average	6.10	

*Information is furnished by the Customer/Representative.

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Job No: CTCE/BBMP/KRIDL/W.No.13/BC/Bitumen/2017-18 20.03.2018

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Santhosh Nagara and Prashanth Nagara surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/221/2017-18 Dated: 07.02.2018
* Sample ID	:	Roads at Santhosh Nagara and Prashanth Nagara Ward No.13
Technical Reference	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	20.03.2018

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	34.28	7.30	7.30	92.70	79-100
9.5	36.92	7.86	15.17	84.83	70-88
4.75	68.52	14.59	29.76	70.24	53-71
2.36	65.15	13.88	43.64	56.36	42-58
1.18	56.32	12.00	55.63	44.37	34-48
0.6	52.25	11.13	66.76	33.24	26-38
0.3	46.35	9.87	76.63	23.37	18-28
0.15	35.21	7.50	84.13	15.87	12-20
0.075	36.69	7.81	91.95	8.05	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	33.96	7.23	7.23	92.77	79-100
9.5	39.25	8.36	15.59	84.41	70-88
4.75	68.56	14.60	30.20	69.80	53-71
2.36	74.25	15.81	46.01	53.99	42-58
1.18	62.32	13.27	59.28	40.72	34-48
0.6	58.55	12.47	71.76	28.24	26-38
0.3	32.22	6.86	78.62	21.38	18-28
0.15	22.35	4.76	83.38	16.62	12-20
0.075	38.56	8.21	91.59	8.41	4-10

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Agg/2017-18 20.03.2018

TEST REPORT ON GRADATION OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements of asphalting at Santhosh Nagara and Prashanth Nagara surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/221/2017-18 Dated: 07.02.2018
* Sample ID	:	Bituminous Concrete
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Hot mix plant, Bangalore
Date of Testing	:	20.03.2018

Total Weight of Sample: **5100** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18
13.2	765	15.00	15.00	85.00	79 - 100	
9.5	590	11.57	26.57	73.43	70 - 88	
4.75	610	11.96	38.53	61.47	53 - 71	
2.36	620	12.16	50.69	49.31	42 - 58	
1.18	535	10.49	61.18	38.82	34 - 48	
0.600	545	10.69	71.86	28.14	26 - 38	
0.300	450	8.82	80.69	19.31	18 - 28	
0.150	275	5.39	86.08	13.92	12 - 20	
0.075	270	5.29	91.37	8.63	4 - 10	

Total Weight of Sample: **5150** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18
13.2	515	10.00	10.00	90.00	79 - 100	
9.5	620	12.04	22.04	77.96	70 - 88	
4.75	625	12.14	34.17	65.83	53 - 71	
2.36	560	10.87	45.05	54.95	42 - 58	
1.18	600	11.65	56.70	43.30	34 - 48	
0.600	540	10.49	67.18	32.82	26 - 38	
0.300	510	9.90	77.09	22.91	18 - 28	
0.150	350	6.80	83.88	16.12	12 - 20	
0.075	450	8.74	92.62	7.38	4 - 10	

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Stability/2017-18 20.03.2018

TEST REPORT ON MARSHALL STABILITY OF MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
*Name of the Work	:	Improvements of asphalting at Santhosh Nagara and Prashanth Nagara surrounding area in Mallasandra Ward No.13, Shettyhalli Sub Division, BBMP, Bangalore.
*Reference	:	BBMP/EE/DD/WO/221/2017-18 Dated: 07.02.2018
* Source	:	Hot mix Plant, Bangalore
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	20.03.2018

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshall Stability (Kn at 60°C)	9.35	10.30	9 Kn (min)
2	Marshall flow (mm)	2.95	3.60	2 – 4
3	Voids in Compacted Mix %	3.50	4.25	3 - 6
4	Percent voids in Mineral Aggregate (VMA)	14.10	14.60	13 - 15
5	Percent Voids filled with Bitumen (VFB)	67.85	68.50	65 - 75
6	Density, g/cc	2.26	2.27	-

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